

CalNail, a Web-based Data Repository for Soil Nail Wall Design and Construction Case Histories

RESULTS: *A repository of institutional knowledge on soil nail wall design and construction is needed by Caltrans geotechnical professionals. An early research effort in 2002 documented a number of design and construction soil nail wall case histories and produced a web-based repository. In 2005 a renewed development effort was initiated to continue this work to produce a deployable web-based system called CalNail.*



Figure 1 – Typical soil nail wall construction

Why We Pursued This Research

Currently, geotechnical staff within Caltrans do not have ready access to detailed information on previously designed soil nail walls. Much of this information is kept by individual designers, or stored in paper format, with no organized method of retrieval. Having access to this institutional knowledge could help Caltrans carry out more effective designs. A wealth of soil nailing project data exists in literature as well as in state transportation agency records. Once compiled and organized this could serve as the basis of a high quality geotechnical information repository. This system has potential benefits to design engineers, consultants, contractors, planners, and researchers.

What We Did

In 2002 a research project was initiated to develop a repository of data on the design and construction

of Caltrans' soil nail walls. A web-based pilot information management system, called CalNail, was planned as a centralized source of information for those involved in the design, construction, maintenance, and research of soil nailing infrastructure on the state highway system. An initial version of CalNail was completed in mid 2003. However, with the departure of the Principal Investigator from Caltrans, the system was never fully test deployed, and further development work ceased.



Figure 2 – CalNail system main page

In July 2005 the project was taken up again with a new Principal Investigator and project team. As a first order of work, the team evaluated the original CalNail system, specifically the database model and web page code. A number of issues were

identified during the evaluation. A meeting was held with the original project panel to present the results of the evaluation, provide a recommended course of action, and assess end-user support for continuing this effort.

With the support of the end users, development of the revised system began. A beta version of the new CalNail system was unveiled to the project clients in May 2006. The new version retains all of the original wall and soil attributes and system features, in addition to some of the graphics, but implements a more extensible data model to accommodate complex types of data in a relational context as well as other significant improvements.

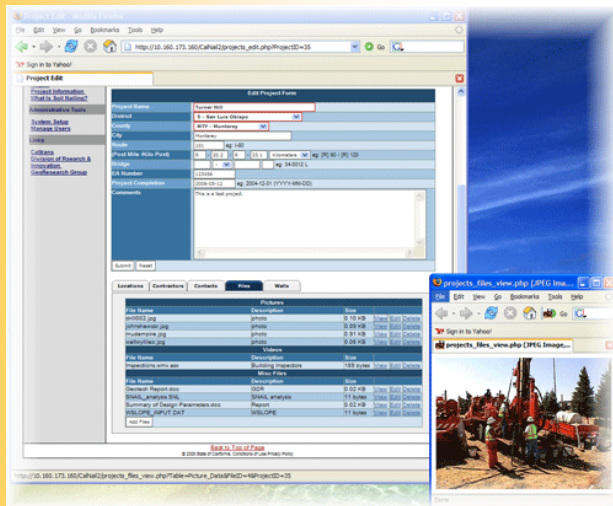


Figure 3 – Photos, video, and other files are available through the CalNail system

Research Results

Deliverables resulting from the project include a beta-version design tool, called CalNail, and a database of soil nail wall case histories. CalNail is a web-based centralized repository of information for those involved in the design, construction, maintenance, and research of soil nailing infrastructure in California's highways. CalNail currently hosts over 30 documented case histories for soil nail walls in California. This system effectively demonstrates the value of capturing institutional design and construction knowledge. Further evaluation of the system by the end users is needed to assess deployment potential.

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